

REMARKS:

- 1) In accordance with the PCT procedures, the original specification of this application was a direct literal translation of the foreign language text of the corresponding PCT International Application. The specification has now been amended editorially and formally to better comply with typical US application format (e.g. including section headings, and avoiding reference to specific claim numbers in the description). Also, the abstract has been amended into better US form. These merely editorial amendments do not introduce any new matter. Entry thereof is respectfully requested.
- 2) Further according to the PCT procedures, the original claims of this application were a direct literal translation of the foreign language claims of the corresponding PCT International Application. All prior claims 1 to 54 have now been canceled, and new claims 55 to 82 have been introduced. The new claims are generally based on the prior claims with editorial and formal revisions to better comply with typical US claim form, style, terminology and practice. Furthermore, indefinite aspects asserted by the Examiner have been clarified as will be discussed below. Also, additional substantive limitations have been introduced into new independent claim 55, as will be discussed below. New independent claim 82 has been drafted "from the ground up" as a fresh approach at covering inventive subject matter with a different claim style and terminology in comparison to the original literally translated PCT claims. The new claims

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are supported by the original disclosure as shown in the following table, and do not introduce any new matter. Entry and consideration thereof are respectfully requested.

new claims	55	56	57	58	59	60	61	62
original support	CI 1, 32; Figs. 3, 4; P 4 L 1- P 6 L 4; P 7 L 6-20	P 7 L 14-20	CI 29	CI 30	CI 31	CI 33	CI 34	CI 35

new claims	63	64	65	66	67	68	69	70
original support	CI 36	CI 37	CI 38	CI 39	CI 40	CI 41	CI 42	CI 43

new claims	71	72	73	74	75	76	77	78
original support	CI 44	CI 45	CI 46	CI 47	CI 48	CI 49	CI 50	CI 51

new claims	79	80	81	82
original support	CI 52	CI 53	CI 54	CI 1, 30, 31, 32, 33, 34; Figs. 3, 4; P 4 L 1-P 6 L 14;

- 3) Referring to section 1 on page 2 of the Office Action, the election of Species I is hereby affirmed. The rejoinder of claims other than 39, 46 and 47 is appreciated. After the present amendment, new claims 55 to 65, 67 to 72 and 75 to 82 read on the elected Species I and are elected for further examination, while new claims 66, 73 and 74 read on non-elected Species II and will presumably be withdrawn from further consideration. However, the non-elected claims 66, 73 and 74 depend from generic independent claim 1, so that these dependent claims should be rejoined, considered and allowed if independent claim 1 is ultimately found allowable.

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4) Referring to section 3 on pages 2 and 3 of the Office Action, the rejection of claims 1, 2, 30, 32, 33, 37, 38, 43, 44, 48 and 49 as indefinite under 35 USC 112(2) has been obviated by the cancellation of those claims, and has been taken into account when preparing the new claims. Particularly, the new claims avoid or clarify the phrases found unclear by the Examiner in the original claims. It is respectfully submitted that the new claims 55 to 82 are all clear and definite in particularly pointing out and distinctly claiming the inventive subject matter. Accordingly, please withdraw the rejection under 35 USC 112(2).

5) Referring to section 5 on pages 3 to 5 on the Office Action, the rejection of claims 1, 2, 30 and 31 as anticipated by US Patent 4,429,844 (Brown et al.) is respectfully traversed.

Prior claims 1, 2, 30 and 31 have been canceled. This rejection will be discussed in connection with new claims 55, 58, 59 and 82, which incorporate subject matter from prior claims 1, 2, 30 and 31 (among other features).

New independent claim 55 incorporates subject matter from prior claims 1 and 32, as well as further features and clarifications based on the drawings and written description as indicated above. Because claim 55 incorporates subject matter from claim 32, which was not included in this rejection, therefore this rejection cannot apply against present new claim 55. Also, this rejection cannot apply against claims 58 and 59 depending from claim 55.

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More particularly, new independent claim 55 recites that the flexible region of the wing comprises longitudinally extending torsion boxes that are arranged next to one another and that are each respectively formed of a first cover skin, a second cover skin that is spaced apart from the first cover skin, and at least one spar arranged between the two cover skins, and further comprising an adjusting mechanism adapted to change a shape of the torsion boxes and therewith of the wing profile. Brown et al. does not disclose such a structure involving torsion boxes as well as an adjustment mechanism adapted to change the shape of the torsion boxes in a flexible region. Instead, the flexible wing region of Brown et al. is constructed without torsion boxes, but rather with an elastomeric material (88). Therefore, present claim 55 is not anticipated by Brown et al. and also would not have been obvious, because the provision of an elastomeric material (88) is very different from, and directly contrary to an arrangement of torsion boxes with spars sandwiched between two cover skins.

Furthermore, present independent claim 55 recites that the wing tip region of the wing comprises an end piece arranged and adapted to permit and compensate mutual relative sliding displacement of the two cover skins relative to one another, along with a change of the curvature or camber of the wing's flexible region due to the change of the shape of the torsion boxes. Brown et al. does not disclose such an end piece that allows relative sliding displacement of two cover skins. In fact, because Brown et al. do not use a structure with spars

sandwiched between two cover skins, but rather an elastomeric material (88) encasing the actuator scissor plates (30, 32), there would be no need and no purpose for such an end piece to permit relative sliding displacement of two cover skins, because there are no cover skins that would undergo a sliding displacement. Instead, Brown et al. purposely provide elastomeric flexing of the elastomeric material (88), for example as shown in Figs. 4 and 5. Therefore, present claim 55 is not anticipated and would not have been obvious, because there would have been no suggestions toward the presently claimed end piece.

Present claims 58 and 59 (reciting features from prior claims 30 and 31) are patentably distinguishable over Brown et al. already due to their dependence from claim 55 as discussed above.

New independent claim 82 recites features from prior claims 1, 30, 31, 32, 33 and 34, as well as clarifications based on the drawings and the written description as indicated above. Thus, because this rejection applying Brown et al. was not asserted against prior claims 32, 33 and 34, therefore the rejection cannot apply against present claim 82.

More particularly, claim 82 is directed to a wing comprising a flexible wing portion interposed between and connecting a wing tip portion and a wing body. The flexible wing portion comprises plural spars arranged in a space between top and bottom cover skins. As discussed above, the flexible wing portion according to Brown et al. does not include such a structure of spars arranged between spaced-apart cover skins. Further, the flexible wing portion according to the invention also comprises plural

vertebral adjusting mechanisms that each respectively comprise plural vertebra bodies that are respectively interposed between successive ones of the spars. Brown et al. do not disclose or suggest such an arrangement of adjusting mechanism vertebra bodies interposed between successive spars. The scissor plates (30, 32) forming actuator arrangements according to Brown et al. could not be arranged in a manner interposed between successive spars, but instead act in combination with the elastomeric material (88) to achieve a variable curved camber of the flexible wing portion. There would have been no suggestion toward the present invention, because the use of individual vertebra bodies between spars has no similarities to, and is not a predictable modification of, unitary scissor plates enclosed in elastomeric material. For these reasons, present claim 82 is not anticipated and would not have been obvious in view of Brown et al.

For the above reasons, please withdraw the anticipation rejection applying Brown et al., because this rejection does not apply against any of the present new claims.

- 6) Referring to section 6 on page 5 of the Office Action, the rejection of claims 1, 2, 29 to 38, 40 to 45 and 48 to 54 as anticipated by US Patent 6,644,599 (Perez) is respectfully traversed.

The prior claims have been canceled. The present rejection will be discussed in connection with new independent claims 55 and 82.

The Perez patent discloses a wing flexing mechanism that shares similarities with the present invention. However, a

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significant difference between the present invention and Perez involves the location and orientation of the flexible region.

According to present independent claim 55, the wing includes a flexible region that connects a wing tip region with a remainder of the wing. The wing tip region forms the outboard end of the wing in the wing span direction. As discussed above, the flexible region comprises spars arranged between two cover skins to form torsion boxes, and an adjusting mechanism adapted to change a shape of the torsion boxes and therewith of the wing profile. The wingtip region comprises an end piece arranged and adapted to permit and to compensate a mutual relative sliding displacement of the first and second cover skins relative to each other with a change of curvature or camber of the flexible region due to the change of the shape of the torsion boxes. Thus, the adjusting mechanisms are necessarily oriented extending toward and ending at the wing tip itself, and the relative sliding displacement of the two cover skins occurs here at the wing tip. This enables a purposeful camber variation of the flexible region leading to the wing tip, for example to deflect the wing tip region itself downwardly to a varying extend.

Contrary to the present invention of claim 55, the Perez Patent provides adjusting mechanisms in the leading edge region (11) oriented toward the leading edge, and/or in the trailing edge region (12) oriented toward the trailing edge, but does not provide such a flexible region with adjusting mechanisms in a wing tip region at and oriented toward the wing tip (8) at the outboard end of the wing (see Fig. 1 and col. 2 line 48 to col.

3 line 20). Thus, furthermore, while Perez provides an end piece that permits and compensates mutual relative sliding displacement between two cover skins, this end piece is provided along the leading edge and/or along the trailing edge, but not at the wing tip (col. 6 line 41 to col. 7 line 18). Therefore, the invention of present claim 55 is not anticipated by Perez, and also would not have been obvious, because Perez provides no suggestion, motivation or predictable result that could be achieved by providing such a flexible region with a sliding compensation end piece at a wing tip itself.

The dependent claims are patentably distinguishable already due to their dependence from claim 55 as discussed above.

Present independent claim 82 is directed to a wing comprising a flexible wing portion interposed between and connecting a wing tip portion and a wing body, as discussed above. The flexible wing portion includes plural spars extending longitudinally perpendicular to a leading edge of the wing in a space between top and bottom cover skins. The flexible wing portion further comprises vertebral adjusting mechanisms that each respectively extend longitudinally in a longitudinal direction parallel to the leading edge and perpendicular to the spars. While Perez also discloses a flexible wing portion with vertebral adjusting mechanisms and spars between cover skins, the location and orientation is significantly different according to Perez. Namely, in Perez, the flexible wing portion is either a leading edge region (11) or a trailing edge region (12), whereby the spars extend parallel to the leading edge or the trailing

edge, and the adjusting mechanisms extend perpendicular to the leading edge or the trailing edge. See the Perez Patent Figs. 1, 2 and 3, and at col. 8 lines 63 to 65, and col 9 lines 12 to 15, expressly stating that the torsion boxes are torsionally stiff about the wing-span direction, and that the vertebra bodies are configured to rotate about the wing-span direction. That is contrary to the present invention, in which the spars extend perpendicular to the leading edge and the vertebral adjusting mechanisms extend parallel to the leading edge so that the pivoting of the vertebra bodies occurs about an axis perpendicular to the leading edge. Still further, the flexible wing portion of Perez does not connect the wing tip to the wing body (as presently claimed), but rather connects the leading edge or the trailing edge to the wing body. For these reasons, and as discussed above, the present invention of claim 82 is not anticipated by Perez and would not have been obvious, because there would have been no suggestion, motivation or predictable result that could be achieved by arranging and orienting a flexible wing portion as presently claimed so as to connect a wing tip to a wing body while allowing flexing for a camber change of the flexible wing portion leading to the wing tip.

For the above reasons, the Examiner is respectfully requested to withdraw the anticipation rejection applying Perez, as inapplicable against any of the present new claims.

- 7) Referring to section 7 on page 6 of the Office Action, the additional prior art made of record requires no particular

comments because it has not been applied against the claims. Generally, US Patent 6,010,098 (Campanile et al.) comprises a closed continuous wing skin and thus does not suggest or have need for a sliding displacement or length compensation arrangement. Also, the reference does not suggest the location, arrangement and orientation of a flexible wing region leading to the wing tip as presently claimed, because such an arrangement at the wing tip would not even be a functional wing in view of the teachings of Campanile et al.

- 8) Favorable reconsideration and allowance of the application, including all present claims 55 to 82, are respectfully requested.

Respectfully submitted,

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Enclosures:
Transmittal Cover Sheet
Term Extension Request
Form PTO-2038

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CERTIFICATE OF FAX TRANSMISSION:

I hereby certify that this correspondence with all indicated enclosures is being transmitted by telefax to (571) 273-8300 on the date indicated below, and is addressed to: COMMISSIONER FOR PATENTS, P.O. BOX 1450, ALEXANDRIA, VA 22313-1450.

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